

AMENDED CLAIMS

1. (Currently amended) A method for fabricating simultaneously a phase separated organic film with alignment, comprising:

preparing a mixture of liquid crystal, prepolymer and polarization-sensitive material;

disposing said mixture on a substrate;

applying a polarized light from a light source to said mixture disposed on the substrate; and

inducing phase separation of said mixture simultaneously during said applying step, ~~thereby forming~~ to form a separate layer of homogenously aligned liquid crystal material adjacent a separate and distinct layer of polymer and said polarization-sensitive material on said substrate, wherein the inducing includes polymerizing the prepolymer to generate the polymer layer, and the alignment of the phase separated liquid crystal layer is induced by the alignment of the polymer and polarization-sensitive material layer caused by the simultaneously applying of the polarized light.

2. (original) The method according to claim 1, further comprising:

disposing a second substrate over said layers.

3. (Canceled)

4. (Currently amended) The method according to claim 1, ~~further comprising:~~ wherein the applying of a polarized light comprises:

illuminating with a light source a side of the substrate opposite the side of the substrate having said mixture disposed

thereon, said illuminating transmitting through the substrate to the mixture; and

interposing a polarizer between said light source and said substrate to impart a desired polarization to the light that in turn causes the orientational alignment to said liquid crystal of the polymer and polarization-sensitive material layer.

5. (Currently amended) The method according to claim 4, ~~further comprising: wherein the light source is selected from a group consisting of: (i) — positioning an ultraviolet light source near said substrate opposite the side with said disposed mixture and (ii) a visible light source.~~

6. (Canceled)

7. (Currently amended) The method according to ~~claim 2~~ claim 1, further comprising:

preparing an initial mixture of an initial prepolymer and an initial polarization-sensitive material; and

coating said initial mixture on said ~~second~~ substrate prior to said mixture disposing step.

8. (original) The method according to claim 7, wherein said initial polarization-sensitive material is sensitive to a different wavelength of light than said polarization-sensitive material.

9. (Currently amended) The method according to claim 8, further comprising:

applying an initial polarized light to said initial mixture coated on said substrate prior to said mixture disposing step to impart an alignment orientation thereto.

10. (Currently amended) The method according to claim 8, further comprising:

applying an initial polarized light to said initial mixture coated on said substrate after said mixture disposing step to impart an alignment orientation thereto.

11. (Currently amended) The method according to claim 10, ~~further comprising:~~ wherein the applying of the initial polarized light comprises:

illuminating with a light source a side of the substrate opposite the side of the substrate having said initial mixture coated thereon, said illuminating transmitting through the substrate to the initial mixture; and

positioning a mask and a polarizer between said light source and said substrate ~~prior to said applying step~~ during the illuminating so as to form said layer of liquid crystal with microstructures, wherein all of said microstructures are adjacent to ~~said a~~ a second substrate disposed over said layers.

12. (original) The method according to claim 11, further comprising:

positioning another mask between said light source and said substrate after said initial applying step.

13. (Canceled)

14. (Currently amended) The method according to claim 1, ~~further comprising~~ wherein the inducing of phase separation includes:

~~preparing said mixture with at least a thermally activated polymer; and~~

~~thermally activating said mixture to induce inducing phase separation and impart an alignment orientation to said liquid crystal of said mixture.~~

15. (original) The method according to claim 14, wherein said polarized light is either visible or ultraviolet.

16. (Currently amended) The method according to claim 7, ~~further comprising: preparing wherein said mixture with initial prepolymer includes epoxy and resin; and permitting phase separation of said initial mixture to induce phase separation of said initial mixture and impart an alignment orientation to said liquid crystal.~~

17. (original) The method according to claim 16, wherein said polarized light is either visible or ultraviolet.

18. (original) The method according to claim 2, further comprising:

positioning a mask and a polarizer between said light source and said substrate prior to said applying step so as to form said layer of liquid crystal with microstructures, wherein all of said microstructures are adjacent to said second substrate.

19. (Currently amended) A method for fabricating a liquid crystal device with alignment properties comprising:

~~providing a substrate;~~

providing a first mixture comprising at least a first polarization-sensitive agent and a prepolymer;

providing a second mixture comprising at least a second polarization-sensitive agent and a prepolymer;

mixing into either said first or second mixture a liquid crystal material;

disposing said first mixture on to said ~~a~~ substrate;

disposing said second mixture over said first mixture;

~~initiating~~ applying a first ~~phase-separation~~ polymerization process to said first mixture, the first polymerization process being selected from the group consisting of ~~at least~~ (i) applying polarized visible light polarization, (ii) applying polarized ultraviolet light polarization, (iii) applying thermal induction, (iv) applying chemical induction, and (v) applying solvent induction;

~~initiating~~ applying a second ~~phase-separation~~ polymerization process to said second mixture, the second polymerization process being selected from the group consisting of ~~at least~~ (i) applying polarized visible light polarization, (ii) applying polarized ultraviolet light polarization, (iii) applying thermal induction, (iv) applying chemical induction, and (v) applying solvent induction; and

said polymerization processes causing the liquid crystal material to phase separate into a separate and distinct phase-separated liquid crystal layer, at least one of said first and second polymerization processes applying polarized visible or ultraviolet light that imparts ~~imparting~~ orientational alignments to said liquid crystal layer.

20. (Canceled)

21. (original) The method according to claim 19, further comprising:

securing a second substrate to said first substrate with said first and second mixtures therebetween.

22. (original) The method according to claim 19, wherein said applying of polarized light polarization processes comprise:

positioning a light source near said substrate; and

positioning a polarizer between said substrate and said light source.

23. (Currently amended) The method according to ~~claim 19~~ claim 22, further comprising:

re-positioning said polarizer after said first initiating step, wherein said polarization-sensitive agents impart different orientational alignments at their respective interfaces with said liquid crystal.

24-29. (Canceled)

30. (New) The method according to claim 1, wherein said applying of polarized light simultaneously induces said phase separation.